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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/810,082
Filing Date: March 26, 2004
Appellant(s): DOSS ET AL.

Michael Rodriguez, Reg. No. 53,528
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 07 July 2008 appealing from the Office action mailed 13 December 2005.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

5,450,618	NADDELL et al.	9-1995
Re. 36,934	ARNAUD	10-2000

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

1. Claims 1-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Naddell et al. (US Patent 5,450,618) in view of Arnaud (US Patent Re. 36,934).

Claim 1 is limited to *a telephone system*. Naddell discloses a full duplex and half duplex communication unit with volume setting. See Abstract thereof. The communication unit of Naddell includes a rotary switch (202) as seen in figure 2. The state of the switch indicates the communication mode of the communication unit as seen in figure 4. Specifically, when the button is depressed, the unit is in a low-gain full-duplex mode. Conversely, the button's second state indicates a loud-speaking half-duplex mode. In addition, the angular position of the switch indicates a desired loud-speaking volume. See column 2, lines 39-52.

With respect to the claims, the communication unit of Naddell clearly includes a *receiver* (301) for receiving *signals* and an associated amplifier (302), i.e. *a receiver in communication with a receive signal path, the reliever having associated therewith a receiver gain*. While not shown, the device inherently comprises a *transmitter* that allows a user of the communication unit to transmit their voice signals to a remotely located user. The unit as shown in figure 3 includes a processor (307). This processor

receives the volume selector (305) and mode selector (306) inputs and determines the audio level, as such, the processor corresponds to a receiver gain detector configured to detect the receiver gain. All acoustic telephones have a degree of receiver gain stability inherently; as such the unit of Naddell includes a *receiver stability level*. As just stated with respect to the processor, the processor includes selector input determining means as well as control means used for adjusting an audio level, i.e. *a controller in communication with the receiver gain detector*. As can be appreciated from figure 4, the communication unit is operated in a full-duplex mode when the receiver level is set to a low-gain setting, i.e. *when the receiver gain is approximately less than the receiver stability level*, and is conversely operated in a half-duplex mode when the receiver level is set to a high-gain setting, i.e. *when the receiver gain is approximately above the receiver stability level*. At this point, it is clear that Naddell anticipates all above limitations of the claim, however, Naddell fails to disclose the details of the half-duplex mode and, hence, a controlling scheme thereof. Therefore, Naddell anticipates all limitations of the claim with the exception wherein *the adaptive duplex mode being such that an adaptive attenuation level alternately applied on the receive signal and transmit signal paths is dependent upon the level by which the receiver gain exceeds the receiver stability level*.

As is well known in the art, when a telephone is operated in a handsfree mode, high-gain received signals can acoustically couple with the transmitter and cause oscillations. These oscillations can be mitigated by maintaining the transceiving loop's gain to a value less than or equal to unity. Since the communication unit of Naddell does

not disclose the circuitry used to provide this protection, one of ordinary skill in the art would have simply used another prior art teaching to provide this functionality. One example is the control device for a hands-free telephone set as taught by Arnaud. See Abstract thereof. The device as taught by Arnaud is of particular relevance to the unit of Naddell because it provisions loop stability even with a user-selected volume setting, symbolized by amplifier (GL) and gain (dGL) of figure 2; also see equations 2 and 3 of column 4. As such, the gain of devices (ATR) and (ATE) are set in accordance with the value of (dGL) in order to maintain a predetermined loop gain, i.e. *an adaptive attenuation level…is dependent upon the level by which the receiver gain exceeds the receiver stability level*. See column 4, lines 23-26. Note, since the half-duplex mode of Naddell is only activated upon a high-gain mode, it is assumed herein that all values of dGL represent the gain level above the *receiver stability level*.

It would have been obvious to one of ordinary skill in the art at the time of the invention to provide loop stability control as taught by Arnaud because first, the communication unit of Naddell requires such a prior art teaching; and second, the system of Arnaud compensates for user selectable volume settings as is clearly a mainstay of the unit of Naddell.

With respect to the new claim limitations, where the "controller…selectively operates the telephone system in a full duplex mode in response to the receiver gain being approximately less than the receiver stability level and to selectively operate the telephony system in an adaptive duplex mode in response to the receiver gain being approximately above the receiver stability level" it is noted that this limits the scope of

the claim as originally filed. Specifically, the range of time in which the telephone system is operated in each of the full and half-duplex modes has been narrowed from any time period when the receiver gain is at a particular level with respect to the receiver stability level to a time period beginning in response to the receiver gain being at a particular level with respect to the receiver stability level. This period is contemplated by the disclosure of Naddell. As seen in figure 4, the position of the mode button is checked in 402 to determine if the telephone is to operate in a low-volume level mode or a high-volume level mode. After this volume determination is made, the system is switched into either a full or a half-duplex mode of operation in steps 403 and 406.

Claim 2 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. As shown in the rejection of claim 1, Arnaud teaches applying an attenuation factor dA as linear function of dGL, i.e. *wherein the attenuation level...is approximately equal to the level by which the receiver gain exceeds the receiver stability level*. See column 4, equation 3. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 3 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. With respect to Naddell, the method of figure 4 includes a feedback path from steps (405) and (408) that clearly indicate that gain monitoring occurs over an entire conversation. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 4 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. As seen in figure 3 of Naddell, the system includes a volume selector

(305), i.e. *a volume setting*, and a mode selector (306), i.e. *a boost function*. As shown in the rejection of claim 1, the mode selector selects between the full and half-duplex modes, while the volume selector modifies the switched attenuation in accordance with the teachings of Arnaud, i.e. *wherein the receiver gain is a function of the volume setting and the status of the boost function*. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 5 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. As explained in column 4, lines 40-55 of Arnaud, selective attenuation is applied to a non-active channel, such that during *an active receive mode the controller applies the adaptive attenuation level on the transmit signal path* and during *an active transmit mode the controller applies the adaptive attenuation level on the receive signal path*. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 6 is limited to *the telephone system of claim 5*, as covered by Naddell in view of Arnaud. Clearly, a detector is inherently present in the system of Arnaud to enable active path detection. An exemplary detector is depicted in figure 4 thereof. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 7 is limited to *the telephone system of claim 6*, as covered by Naddell in view of Arnaud. As seen in figure 4, the transmit signal less noise (VE) is compared against threshold (VR) to determine which signal channel is active. When (VE) exceeds (VR), the transmit signal is active. See column 6, line 60 through column 7, line 47. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 8 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. The communication unit of Naddell does not disclose any type of attenuation in the full-duplex mode as the chance of oscillating is essentially eliminated due to the preset low gain of the speaker in the full-duplex mode. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claim 9 is limited to *the telephone system of claim 1*, as covered by Naddell in view of Arnaud. While not explicitly disclosed by either Naddell or Arnaud, the intrinsic receiver stability level is a physical parameter determined by the orientation and distance apart of the loudspeaker and microphone of a telephone set. The typical telephone is limited to about 30 and 35 dB of gain as is acknowledged by the applicant. As such, the recitation of the receiver stability level residing approximately between 30 and 35 dB of gain is inherent. Therefore, Naddell in view of Arnaud makes obvious all limitations of the claim.

Claims 10-18 are limited to essentially the same subject matter as claims 1-9, as covered by Naddell in view of Arnaud, respectively, and are rejected for the same reasons.

Claims 19-27 are limited to essentially the same subject matter as claims 1-9, as covered by Naddell in view of Arnaud, respectively, and are rejected for the same reasons.

(10) Response to Argument

I. Background

The claimed invention relates to a telephone system, an amplified telephone and an adaptive diplexing method. In particular, the invention includes elements and steps for automatically switching a telephone between two different modes of communication based on the amount of gain being applied to signals output by the telephone's speaker/receiver.

As background, a telephone is a device that invariably includes both a speaker and a microphone. The speaker reproduces sounds received from a far-end party over a telephone network. The microphone captures sounds at the near-end, and allows the telephone's user to communicate his words over the network to the far-end party. While a telephone's speaker is generally acoustically isolated from the microphone by the user's head, some users prefer to raise the volume of the speaker and hold the telephone away from their ears. In this situation, sound may leak from the speaker into the microphone if the volume of the speaker is great enough. Accordingly, a far-end party may hear his own voice as an echo transmitted from the near-end party's telephone.

Many prior art solutions exist to eliminate this resulting echo. One method followed by *Naddell* and the claimed invention includes operating in a half-duplex mode of operation. Essentially, when signals are generated by a telephone's speaker, the telephone's microphone is muted/attenuated, and vice versa when the telephone's microphone is transmitting. Such a procedure tends to create several problems, such as periods in a conversation where speech from one of the parties is cut-off because the half-

duplex circuitry erroneously believes a user has ended talking. The preferred mode of operation is the full-duplex operation where a telephone's speaker and microphone are allowed to operate without attenuation. The problem then is to maximize the availability of full-duplex operation in a telephone while avoiding the echo problem that arises from a relatively high speaker gain.

The claimed invention, and the invention of *Naddell,* recognizes the foregoing modes of operation, the desirability of full-duplex communication and the necessity of half-duplex operation to prevent echo when a telephone's speaker is set to a relatively high gain. The inventions resolve these competing concerns by providing a control scheme to switch between full-duplex and half-duplex operation based on the volume of a telephone's speaker.

II. Issue

Claim 1 requires detecting the gain of a telephone's receiver gain and providing the detected gain to a controller. The controller changes the telephone's mode of operation between full-duplex and half-duplex based on the detected gain relative to a receiver stability level. *Naddell* includes a control scheme that detects the position of a mode button that causes a change in the gain of a telephone's receiver. Moreover, the control scheme responds to the button's position and its associated gain levels by setting an appropriate communication mode of either full-duplex or half-duplex. The issue is whether the control scheme of *Naddell* is excluded from the scope of claim 1 by the limitation of a controller that operates a telephone system in either a full-duplex or adaptive duplex mode in response to the receiver gain relative to a receiver stability level.

More specifically, the issue is whether the processor executing the control scheme of *Naddell* responds to a receiver gain level to select a mode of operation.

III. The Board should affirm the rejections because *Naddell* discloses a processor that selects a mode of operation based on a user selected gain being approximately above or below a receiver stability level.

The first step in rejecting claim 1 is to understand the meaning and breadth of the claim language at issue. The claimed controller operates a telephone system in a full duplex mode or adaptive duplex mode in response to the receiver gain being respectively below or above a receiver stability level. This requirement is broad, and fails to include specifics as to how the controller compares the receiver gain against the receiver stability level. The remainder of the claim similarly fails to specify how the comparison is made, and further fails to specify how the receiver gain level is ascertained. Accordingly, the limits are very broad.

Naddell discloses an invention entitled "Full Duplex and Half Duplex Communication Unit with Volume Setting." The communication unit is a telephone handset, *Naddell* at fig.1. Its most salient elements include microphone 105, speaker/receiver 102, mode switch 106/202/306, volume selector 305, processor 307 and audio level set 302. *Id.* at figs.1-3. In operation, a user can vary the position of the mode switch 106/202/306 in two ways. First, a user can rotate the mode switch. *Id.* at col. 3 ll. 2-5. Second, a user can push the mode switch to raise and lower it between an extended position and a depressed position. *Id.* at col. 2 ll. 64-68, col. 3 ll. 1-9. The second method of positioning causes two significant changes in the telephone. The first is to alter the gain applied to signals output by the telephone's receiver 102. *Id.* at col. 3 ll. 5-

9. The second is to vary the mode of communication between full-duplex and half-duplex. *Id.* Because these two changes occur together automatically based on the vertical position of the mode switch, the cause-and-effect relationship between receiver gain and communication mode is rendered ambiguous. Accordingly, the operation of the system can be interpreted in three different ways. The first interpretation is that a user selected communication mode determines the resulting receiver gain setting. The second interpretation is that a user chosen receiver gain setting determines an appropriate communication mode. This is precisely what is claimed. The third interpretation is that the two variables are unrelated. Although *Naddell* espouses the first interpretation, *see id.* at col. 1 ll. 58-68, col. 2 ll. 1-2, the interpretations are simply three metaphysical descriptions of the same device. Accordingly, the only difference between the invention of *Naddell* and the claimed invention is the inventors' intentions. Since patentability is determined based on the structure and operation of a device, and not its designer's intended use of the device, and since the structure and operation of the *Naddell* device can be understood to operate as claimed, the correlation between the invention of *Naddell* and the claimed invention is clear. Accordingly, *Naddell* discloses the claim limitations at issue.

In addition to the foregoing, the correlation between the invention of *Naddell* and the claimed invention is further cemented by a specific passage in Appellant's Specification. In describing how the receiver gain is determined, Appellant discloses using the position of a boost switch similar to the mode switch of *Naddell*, and that effectively sets a volume level that exceeds a receiver stability level and causes the a

switch in the mode of operation. (*See* Specification at ¶¶ 25, 36.) In the interest of candor, the Examiner notes that the Appellant's invention as disclosed may not necessarily switch between a full-duplex mode and an adaptive-duplex mode anytime the boost function is enabled. This is in contrast to the approach of *Naddell* that always transitions from full-duplex to half-duplex after the mode switch 106/202/306 is activated. However, this difference in methodology is not captured by the broad limitations of claim 1 discussed *supra* that fail to include any specifics regarding measuring a gain level or comparing the gain level against a receiver stability level. Although the Appellant is entitled to claiming this difference, it has failed to do so in the independent claims at issue. Accordingly, for the foregoing reasons, the Board should affirm the rejection of claim 1 and all other independent claims, which include similar limitations.

The Appellant posits several arguments against the *Naddell* reference, but none of these arguments illustrates a defect in the rejections. First, the Appellant alleges that *Naddell* fails to disclose the limitation at issue (a controller that operates a telephone system in a full-duplex mode if the receiver gain is approximately below a receiver stability level, and operates the telephone system in an adaptive-duplex mode if the receiver gain is approximately above the receiver stability level.) Specifically, the Appellant alleges that *Naddell* changes operation mode based on a user selection via a mode button, and regardless of the volume level set by a user. (Brief at 5-6, 07 July 2008.) Although, the Appellant is correct that *Naddell* does not control the telephone's volume based on the rotary position of a mode switch when the switch is depressed and

the telephone subsequently operates in full-duplex mode, that is an irrelevant consideration. *Naddell* sets the telephone to a particular volume level when the mode switch is depressed, and causes the telephone to operate in full-duplex mode. As discussed *supra*, because these two variables change together, they have an ambiguous cause-and-effect relationship. A designer may intend for the resulting volume to require a particular communication mode, or vice versa. Regardless of which intention a designer favors, the disclosed invention corresponds to the claimed invention. Accordingly, Appellant's argument is unpersuasive.

The Appellant further alleges that because the *Naddell* device only monitors the position of the mode switch after entering half-duplex mode, the mode selection in *Naddell* is not responsive to a receiver gain level. (*Id.* at 6.) Although Appellant's premise concerning the operation of *Naddell* is true, its conclusion regarding mode selection is incorrect because it does not follow from the premise. Specifically, mode selection in *Naddell* occurs based on the gain setting associated with the vertical position of the mode selection switch and not its rotary position. Accordingly, the sequencing of when the *Naddell* device monitors the rotary position of the mode selection switch is irrelevant. Accordingly, Appellant's argument is unpersuasive.

Examiner's arguments made in this Answer have appeared in various forms previously on the Record and Appellant presents in its Brief some arguments against them. In particular, the Appellant alleges that viewing the position of the mode selection switch as a user selection between high volume and low volume operation is irrelevant because it is only a user selection. The meaning of such an argument is unclear

considering that the receiver gain level in Appellant's invention is user adjusted, such that the prevailing mode is user selected in one sense. (*See* Specification at ¶¶ 25-26.) Ostensibly, Appellant's meaning is that the controller of the claimed invention interprets the user set receiver gain level differently than the processor of *Naddell*. However, given the breadth of the claims, and the absence of details in the claimed controller's operation, any low-level mechanical differences between the processor of *Naddell* and the claimed controller are irrelevant. Accordingly, Appellant's argument is unpersuasive. Moreover, the foregoing illustrate that the Board should affirm the rejections.

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

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